



CAIT

Center for Advanced Infrastructure & Transportation
Rutgers, The State University of New Jersey

QUARTERLY PROGRESS REPORT

Project Title:	Self Compacting Concrete		
RFP NUMBER: 2003-014	NJDOT RESEARCH PROJECT MANAGER: Anthony Chmiel		
TASK ORDER NUMBER: TO 164 / RU Acct 4-29355	PRINCIPAL INVESTIGATOR: Dr. Husam Najm		
Project Starting Date: 1/1/2005 Original Project Ending Date: 12/31/05 Modified Completion Date: 12/31/06	Period Covered: 4 th Quarter 2006		

Task #	Task	% of Total	Fixed Budget	% of Task this quarter	Cost this quarter	% of Task to date	Total cost to date
1	Mobilization	0.0%	\$ -	0.0%	\$ -	0.0%	\$ -
2	Literature Search	5.5%	\$ 3,000.00	0.0%	\$ -	100.0%	\$ 3,000
3	Identify Existing SCC Mix Designs (Mixes of NJDOT Suppliers)	1.9%	\$ 1,000.00	0.0%	\$ -	100.0%	\$ 1,000
4	Testing of Fresh and Hardened Concrete	35.6%	\$ 19,651.00	3.0%	\$ 590	93.0%	\$ 18,275
5	Field Collection and Testing of Specimens	7.3%	\$ 4,000.00	0.0%	\$ -	87.0%	\$ 3,480
6		0.0%	\$ -	0.0%	\$ -	0.0%	\$ -
7		0.0%	\$ -	0.0%	\$ -	0.0%	\$ -
8		0.0%	\$ -	0.0%	\$ -	0.0%	\$ -
9		0.0%	\$ -	0.0%	\$ -	0.0%	\$ -
10		0.0%	\$ -	0.0%	\$ -	0.0%	\$ -
11		0.0%	\$ -	0.0%	\$ -	0.0%	\$ -
12		0.0%	\$ -	0.0%	\$ -	0.0%	\$ -
13		0.0%	\$ -	0.0%	\$ -	0.0%	\$ -
14		0.0%	\$ -	0.0%	\$ -	0.0%	\$ -
15		0.0%	\$ -	0.0%	\$ -	0.0%	\$ -
16		0.0%	\$ -	0.0%	\$ -	0.0%	\$ -
17		0.0%	\$ -	0.0%	\$ -	0.0%	\$ -
18		0.0%	\$ -	0.0%	\$ -	0.0%	\$ -
19		0.0%	\$ -	0.0%	\$ -	0.0%	\$ -
20	Final Report and Quarterly Reporting	49.7%	\$ 27,650.00	4.0%	\$ 1,106	91.0%	\$ 25,162
TOTAL		100.0%	\$ 55,301		\$ 1,696		\$ 50,917

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Green text is updated ever quarter

Black text is automatically updated or static



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Project Objectives:

Identify existing SCC mix designs and perform laboratory tests on existing mix designs of SCC, NC, and HPC to evaluate its physical and mechanical properties and durability. These tests will include: strength and modulus, autogenous and drying shrinkage, freeze-thaw resistance, rapid chloride permeability, scaling resistance, and creep.

Project Abstract:

The self-compacting concrete is a very important material that will have a major impact on the concrete industry similar to HPC. Several states and organization have initiated research on this material and this is just the beginning in this field and it is very important to research and evaluate this material to develop draft recommendations for technical specifications and/or acceptance guidelines for SCC mix design, testing, material handling and placement, curing, and long-term durability. The research team will perform laboratory tests on existing mix designs of SCC to evaluate its physical and mechanical properties and durability and compare it to those NC and HPC. These tests will include: strength and modulus, autogenous and drying shrinkage, freeze-thaw resistance, rapid chloride permeability, scaling resistance, and creep.

1. Progress this quarter by task:

- **New structural mixes are being tested for creep and shrinkage. These mixes are similar to HPC mixes with slight variation to ensure SCC behavior.**
- **Creep of SCC using various parameters has been performed. The effect of SF, FA, Loading age, and water cement ratio has been considered.**
- **Met with NJDOT Structures and Contractor of the I280/GSP Interchange Project and coordinated tasks for Phase II which includes casting demo shafts of SCC and monitoring them. Next week the demo shaft will be poured and we will be there to collect samples and video tape the process.**

2. Proposed activities for next quarter by task:

- **Continue monitoring the creep performance of SCC Mixes with various parameters.**
- **Collect data form the demo shaft on I280/GSP Interchange. Collect samples from the real shafts. A total of (5) shafts will be built using the SCC. Test samples in the lab and get data on CSL tubes from the contractor.**

3. List of deliverables provided in this quarter by task (product date):

- **Results of field samples of NJDOT SCC from the I280/GSP Interchange.**
- **Draft of Phase I Report by end of January.**

4. Progress on Implementation and Training Activities:

5. Problems/Proposed Solutions:

- **All NJDOT SCC mixes are non-structural mix and have exhibited poor performance in creep and durability when comparing to HPC. The overall structural performance of such mixes does not warrant continuing with the testing but to rather concentrate on the**



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SCC mixes developed thus far at Rutgers University. These mixes are emulated from previous HPC mixes used in bridge and other applications.

- Since segregations were observed on all three mixes, it is recommended more test be performed under field conditions but other type of mixes if possible. Or example, Rutgers should perform a demo for the drilled shaft mix and evaluate it for segregation. This is needed for the second Phase of the project.

Total Project Budget	55,301
Modified Contract Amount:	
Total Project Expenditure to date	50,917
% of Total Project Budget Expended	92%

NJDOT Research Project Manager Concurrence: _____ Date: _____